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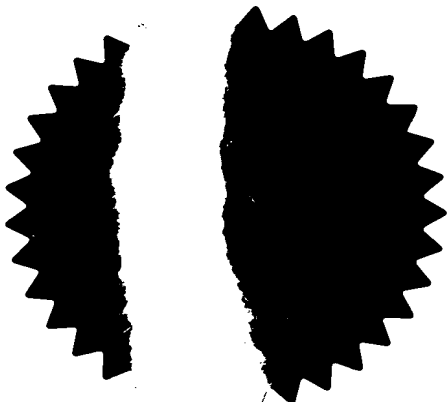
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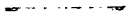
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Request for grant of a patent

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1. Your Reference

APUK009888

2. Patent Application Number

0014721.5

3. Full name, address and postcode of the or of each applicant

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Patents ADP Number

If the applicant is a corporate body, give the country/state of its incorporation

Ohio, USA

772103001

4. Title of the invention

Carton and Carton Blank

5. Name of your agent

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Patents ADP number

5608575007

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and the or each application number

Country

Priority Application Number

Date of Filing

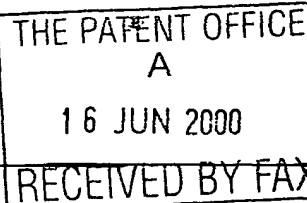
7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Date of filing

8. Is a Statement of Inventorship and of right to grant of a patent required in support of this request

Yes

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Description

8 ✓

Claim(s)

2 ✓

Abstract

1 ✓

Drawing(s)

5 ✓

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translation of priority documents

Statement of Inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents

11. I/We request the grant of a patent on the basis of this application

Signature

Rupert Symons

Date

16 June 2000

12. Name and daytime telephone number of person to contact in the United Kingdom.

Rupert Symons (01788) 577000

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CARTON AND CARTON BLANK

This invention relates generally to a carton having an article retention feature and more particularly to a wraparound type article carrier designed for articles such as a tray containing
5 foodstuff.

The prior art illustrates wraparound cartons with end closure panels for closing the ends of the carton that are connected to respective side and base panels by a series of gusset panels that assist in forming the end closure panels. There are many arrangements of gusset panels,
10 examples of which are shown in US 5 180 054, FR-A-1 44 536. Prior art structures illustrate carriers for carrying articles with planar sides for example cans or bottles and end retention structures are therefore formed in a planar relationship with respective sides and ends of the corner.

15 When articles with tapered sides or articles provided with flanges, for example meat trays will tend to cause relative movement between the article and the carton which is undesirable. Prior art carriers do not provide satisfactory retention for articles of this type.

Another problem associated with the prior art is that the retention structure in some cases
20 tends to collapse within the carrier.

The present invention and its preferred embodiments seek to overcome or at least mitigate the problems of the prior art.

25 One aspect of the invention provides an article carrier for holding an article, for example a tray, comprising a top wall, opposed side walls and a base wall hingedly connected together to form a tubular structure and wherein there further comprises article retention means hingedly connected to said base wall, which article retention means is formed by a pair of interconnected panels formed from adjacent carton walls and inwardly folded to retain the
30 article within the carton.

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Preferably, the pair of interconnected panels may include an inwardly folded panel hingedly connected to the base wall to be disposed in face contacting relationship therewith and wherein the other of the interconnected panels is hingedly connected to the top wall.

5 According to an optional feature of this aspect of the invention the pair of interconnected panels may comprise a gusset panel connected to a side retention panel wherein the gusset panel is hingedly connected to the base wall and includes a tab adapted to be placed intermediate the base panel and an article so that the side retention panel is retained in a set up condition. The tab may project inwardly of the side retention panel.

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According to an optional feature of this aspect of the invention an inner edge of the side retention panel may be arranged to abut against an article.

15 According to another optional feature of this aspect of the invention, the side retention panel may comprise upper and lower parts hingedly connected together to be temporarily folded out of alignment during construction of the article retention structure to assist with construction of the base wall.

20 A second aspect of the invention provides a carton blank for forming an article carrier for holding an article, for example a tray, comprising a first side panel, a top panel, a second side panel and a base panel hingedly connected together in series, wherein there further comprises article retention means hingedly connected to said top panel and said base panel, which article retention means is formed by a plurality of panels including a side retention panel so constructed and arranged to taper inwardly towards said base panel to substantially conform
25 to the shape of an adjacent article held in a set up carton.

Preferably, the plurality of panels may further comprise a gusset panel connected to the side retention panel wherein the gusset panel is hingedly connected to the base wall and includes a tab adapted to be placed intermediate the base panel and an article so that the side retention
30 panel is retained in a set up condition. More preferably, an aperture may be defined between

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side retention panel and the adjacent side wall and wherein the tab projects inwardly into the aperture beyond the hinged connection between the gusset panel and side retention panel.

Exemplary embodiments of the invention will now be described, by way of example only,
5 with reference to the accompanying drawings in which: -

FIGURE 1 illustrates a blank for forming a carton according to one embodiment of the invention;

10 FIGURES 2, 3, 4 and 5 illustrate the carton during the stages of construction from the blank shown in Figure 1: and

FIGURES 6 and 7 illustrate the carton loaded with an article formed from the blank of Figure 1.

15

Referring to the drawings, and in particular Figure 1, there is shown a blank for forming a carton made from paperboard or similar foldable sheet material. In this embodiment, wraparound type cartons can be formed from the blank. It will be recognised that rather than the bottom wall being formed from the interlocked panels, the carton blank may be
20 rearranged whereby some other wall such as a top wall or a side wall is formed from the interlocked panels.

Turning to the embodiment shown in Figure 1 the blank 10 comprises a first base panel 12, first side panel 14, top panel 16, side wall panel 18, inner base panel 19 and after base panel
25 20 hingedly connected one to the next along fold lines 22, 24, 26, 17 and 28 respectively.

A series of panels for forming one or more article retention structures 29, 47 is provided along one side and end of the carton. Preferably, the article retention arrangement 29 is positioned at one end of side wall panel 18 and inner and outer base panels 19, 20. The
30 article retention arrangement 29 comprises a pair of interconnected panels including an

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inwardly folded panel hingedly connected to the base wall to be disposed in face contacting relationship therewith and wherein the other of the interconnected panels is hingedly connected to the top wall. It will be seen from Figure 1 that the pair of interconnected panels comprise a gusset panel 30 hingedly connected to outer base panel 20 along an extension of fold line 28. There further comprises a side retention panel 32 hingedly connected to top panel 16 along an extension of fold line 26. Side retention panel 32 and gusset panel 30 are interconnected by a fold line 34. In this embodiment, fold lines 26, 28 and 34 are substantially parallel.

10 Preferably, side retention panel 32 comprises upper and lower parts 32a and 32b hingedly interconnected along fold line 36.

An aperture 38 may be provided, which in Figure 1 is formed intermediate side panel 18 and side retention panel 32 and may extend into inner base panel 19.

15

Preferably, gusset panel 30 is separated from inner base panel 19 by cut line 40 and it may further comprise a tab portion 31 extending from gusset panel 30 into the aperture 38 beyond foldline 34. In use, tab portion 31 is adapted to project inwardly of the side retention panel to be retained between the base panel 20 and the article T to retain the side retention panel 32 in a set up condition, shown in Figure 6.

20

Likewise, the opposing end of inner and outer base panels 10, 19 and side panel 18 further comprises a similar article retention arrangement 47 comprising a gusset panel 42 hingedly connected to base panel 20 along an extension of fold line 28. There may further comprise a "two part" side retention panel 44a and 44b hingedly connected to top panel 16 along fold line 26. Side retention panel 44 and gusset panel 42 are interconnected by a fold line 46. In this embodiment, fold lines 26, 48 and 46 are substantially parallel.

25

An aperture 50 may be provided which is preferably formed intermediate side panel 18 and side retention panel 44 and may extend into inner base panel 19.

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Similarly, gusset panel 42 is separated from side panel 18 by cut line 52 and it may further comprise a tab portion 43 extending from panel 42 into the aperture 50 beyond fold line 46.

In use, tab portion 43 also projects inwardly of the side retention panel 44 to be retained

5 between the outer base panel 20 and the article T to retain the side retention panel 44 in a set up condition.

The blank may further comprise securing means for securing together the opposed ends of the blank to form a wraparound carton. In this embodiment, the securing means comprises a

10 pair of support panels 60 and 64 extending beyond the ends of base panels 12 and 20 and hingedly connected thereto along fold lines 62 and 66 respectively. In use, the support panels form a two ply structure to provide additional support where the panels engage, which is commonly the weakest part of the carton. The securing means of this embodiment further comprises a locking arrangement comprising a plurality of locking tabs 72, 72a, 72b and 72c

15 extending from support panel 64. There also comprises corresponding apertures for receiving the locking tabs which are defined by cut lines 68a, 70a, 68b, 70b and 68c, 70c extending substantially along interrupted fold line 62. It is envisaged that other known securing means could be used, for example glue or other locking arrangements without departing from the scope of invention.

20

In one class of embodiments, there further comprises one or more display windows to view the contents of the article contained in the carrier. In this embodiment, there comprises two display windows 76 and 78 struck from top panel 16.

25 Turning to the construction of the carton from a carton blank as illustrated in Figure 1, the blank 10 requires a series of sequential folding and optionally gluing operations which is preferably performed in a straight line machine so that the carton is not required to be rotated or inverted to complete its construction. The folding process is not limited to that described below and can be altered according to particular manufacturing requirements.

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The carton blank 10 is moved forward continuously as it is constructed in the manner shown in Figures 2 to 5 and is applied to an article T, for example a tray whereby the top panel 16 is supported by the top of the article.

- 5 The first stage of construction is shown in Figures 2 and 3 whereby the top panel 16 is brought into contact with the top of the tray T. Thereafter, side panels 14 and 18 are folded out of alignment with top panel 16 along fold lines 24 and 26 respectively to wraparound the article and outer base panel 20 is folded out of alignment with inner base panel 19 along fold line 28, so that base panel 20 is folded outwardly in direction X shown in Figure 4. As side
10 panel 18 and outer base panel 20 are folded the construction of the article retention structures occurs, described in more detail below.

- Each article retention structure is formed in a like manner so only the construction of article retention structure 29 will now be described. It is usual for the retention structures on a blank
15 to be formed at substantially the same time by a suitable arrangement of guides and/or locating means.

- Thus, article retention structure 29 is formed by, first, folding gusset panel 30 inwardly about fold line 34 when the outer base panel 20 is folded out of alignment from inner base panel 19.
20

- This folding action is illustrated in Figure 4 and it will be seen that as gusset panel 30 is folded inwardly, it is also folded out of alignment with side retention panel 32 along fold line 34 into a substantially perpendicular relationship. Also, side retention panel 32 is caused to be moved out of alignment with side panel 18 and into an angular relationship with top panel
25 16 along fold line 26. Thus, the side retention panel 32 may be caused to taper inwardly with respect to side panel 18 because fold lines 28 and 34 are offset, as shown in Figure 4.

- Thereafter, inner base panel 19 is folded out of alignment with side panel 18 along fold line 17 and side retention panels 32a and 32b are caused to be folded out of alignment along fold
30 line 36.

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The opposing article retention structure 47 is formed in a similar manner, as shown in Figures 2, 3 and 4.

As the side panels 14, 18 continue to be folded towards the sides of article T, inner base panel 19 is folded inwardly in direction W, shown in Figure 5, which increases the spacings between the side retention panel 32 and side wall panel 18. Base panel 19 is folded into abutment with the base of the article T along fold line 17 and outer base panel 20 is folded towards gusset panels 30 and 42 in direction Y along fold line 28 into face contacting relationship with gusset panels 30, 42 and tabs 31, 42. At this stage of the construction, side retention panels 32 and 44 are thus positioned across the end face of the carton to prevent the tray from sliding out of either end of the carton.

Optionally gusset panel 30, and in those embodiments with tab 31, both the upper gusset panel 30 and the tab 31 can be secured to the top panel 16 by glue or other suitable means known in the art.

Base panels 12, 20 are secured together by suitable means known in the art, whereby the locking tabs 72 are inserted through the slits 68, 70 to be engaged therewith. The shoulder portions are engaged by the abutment with securing panel 60 shown in Figure 6.

Thus, the article carrier is in a set up and erected condition as shown in Figure 7 in which there comprises a top wall 16, opposed side walls 14, 18 and a base wall 20, 12 hingedly connected together to form a tubular structure and wherein there further comprises article retention means hingedly connected to said top wall and said base wall, which article retention means is formed by a pair of interconnected panels 30, 32 formed from adjacent carton walls and inwardly folded to retain the article within the carton.

The article T is held in place by abutment with the inner edges of side retention panels 32 and 44 to prevent unwanted removal.

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It will be seen from Figure 7 that gusset panels 30, 42 and/or tabs 31, 43 are positioned between the bottom of the article T and the inner face of base panel 20 to prevent the retention structures from collapsing.

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It will also be recognised that as used herein, directional references such as "top", "base", "end", "side", "inner" and "outer" do not limit the respective panels to such orientation, but merely serve to distinguish these panels one from another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only: indeed it is envisaged that hinged connection can be formed from one or more of one of the following, a score line, a frangible line or a fold line, without departing from the scope of invention.

10

The present invention and its preferred embodiment relates to an article carrier that is shaped to provide satisfactory strength to hold articles securely, but with a degree of flexibility so that during transit the articles are retained within the carrier. The shape of the blank minimises the amount of paperboard required and the carrier can be applied to one or more articles by hand or automatic machinery. It is anticipated that the invention can be applied to a variety of carriers and is not limited to those of the wraparound type hereinabove described. Further or alternatively, the carton may be adapted to carry a greater number of articles without departing from the scope of the invention.

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CLAIMS

1. An article carrier for holding an article, for example a tray, comprising a top wall, opposed side walls and a base wall hingedly connected together to form a tubular structure
5 and wherein there further comprises article retention means hingedly connected to said top wall and said base wall, which article retention means is formed by a pair of interconnected panels formed from adjacent carton walls and inwardly folded to retain the article within the carton.

10 2. An article carrier as claimed in claim 1 wherein the pair of interconnected panels include an inwardly folded panel hingedly connected to the base wall to be disposed in face contacting relationship therewith and wherein the other of the interconnected panels is hingedly connected to the top wall.

15 3. An article carrier according to claim 1 or claim 2 wherein the pair of interconnected panels comprises an gusset panel connected to a side retention panel wherein the gusset panel is hingedly connected to the base wall and includes a tab adapted to be placed intermediate the base panel and an article so that the side retention panel is retained in a set up condition.

20 4. An article carrier as claimed in claim 3 wherein the tab projects inwardly of the side retention panel.

5. An article carrier as claimed in claim 3 or claim 4 wherein an inner edge of the side retention panel is arranged to abut against an article.

25 6. An article carrier as claimed in any of claims 3 to 5 wherein the side retention panel comprises upper and lower parts hingedly connected together to be temporarily folded out of alignment during construction of the article retention structure to assist with construction of the base wall.

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7. A carton blank for forming an article carrier for holding an article, for example a tray, comprising a first side panel, a top panel, a second side panel and a base panel hingedly connected together in series, wherein there further comprises article retention means hingedly connected to said top panel and said base panel, which article retention means is formed by a plurality of panels including a side retention panel so constructed and arranged to taper inwardly towards said base panel to substantially conform to the shape of an adjacent article held in a set up carton.

8. A blank as claimed in claim 7 wherein the plurality of panels further comprises a gusset panel connected to the side retention panel wherein the gusset panel is hingedly connected to the base wall and includes a tab adapted to be placed intermediate the base panel and an article so that the side retention panel is retained in a set up condition.

9. A blank as claimed in claim 8 wherein an aperture is defined between side retention panel and the adjacent side wall and wherein the tab projects inwardly into the aperture beyond the hinged connection between the gusset panel and side retention panel.

10. An article carrier or a blank for forming an article carrier such as hereinbefore described.

11. An article carrier substantially as hereinbefore described by reference to or as illustrated in Figure 7.

12. A carton blank substantially as hereinbefore described by reference to or as illustrated in Figure 1.

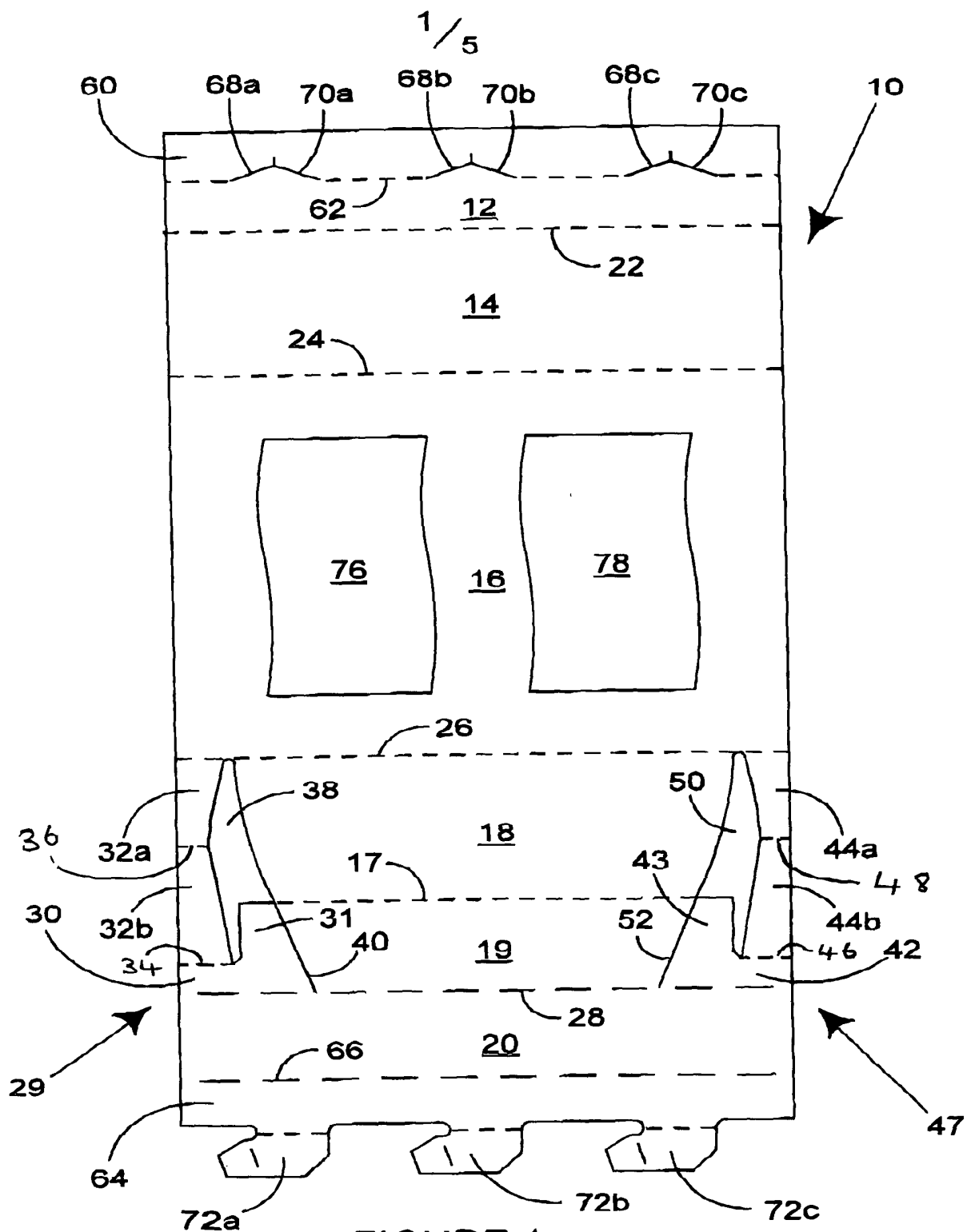
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ABSTRACT

An article carrier and a blank for an article carrier for holding an article, for example a tray, comprising a top wall, opposed side walls and a base wall hingedly connected together to
5 form a tubular structure and wherein there further comprises article retention means hingedly connected to said top wall and said base panel. which article retention means is formed by a pair of interconnected panels formed from adjacent carton walls and inwardly folded to retain the article within the carton.

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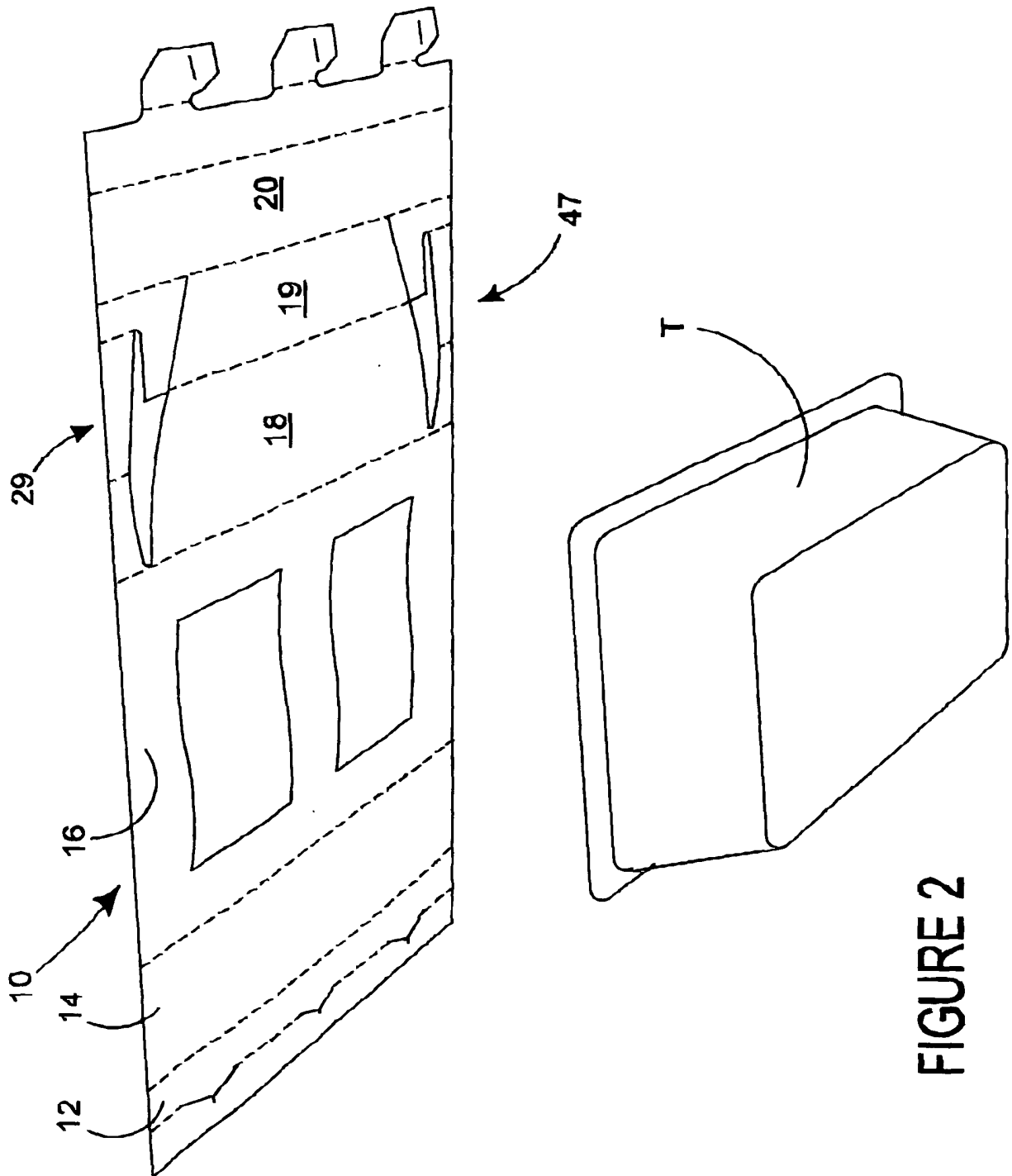


FIGURE 2

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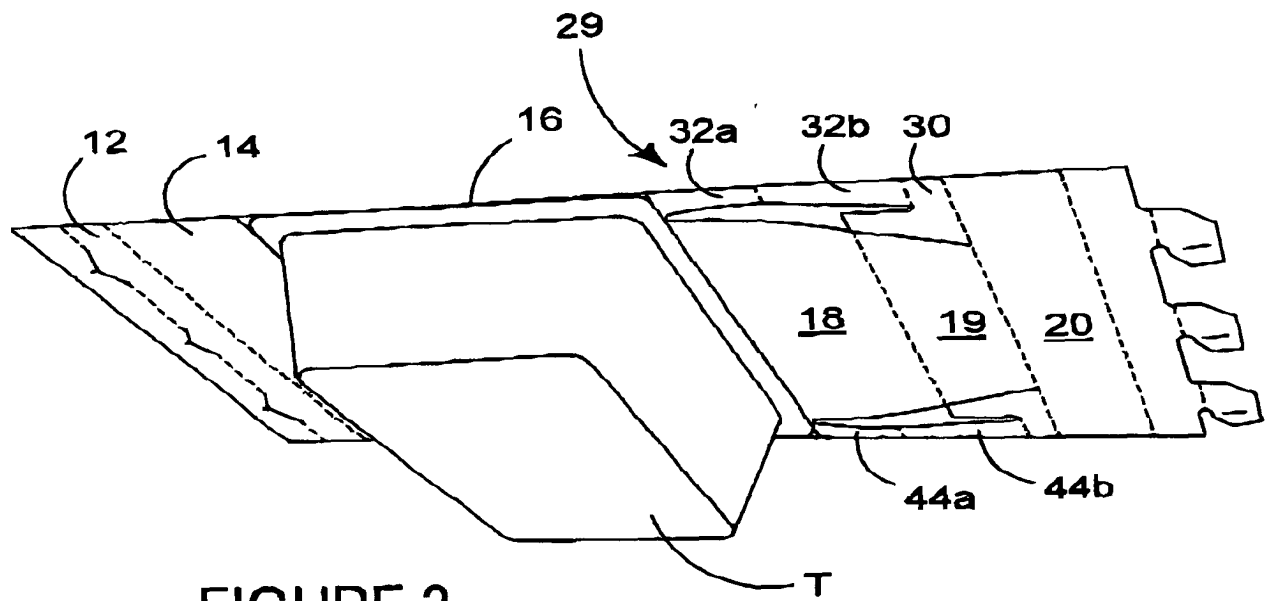


FIGURE 3

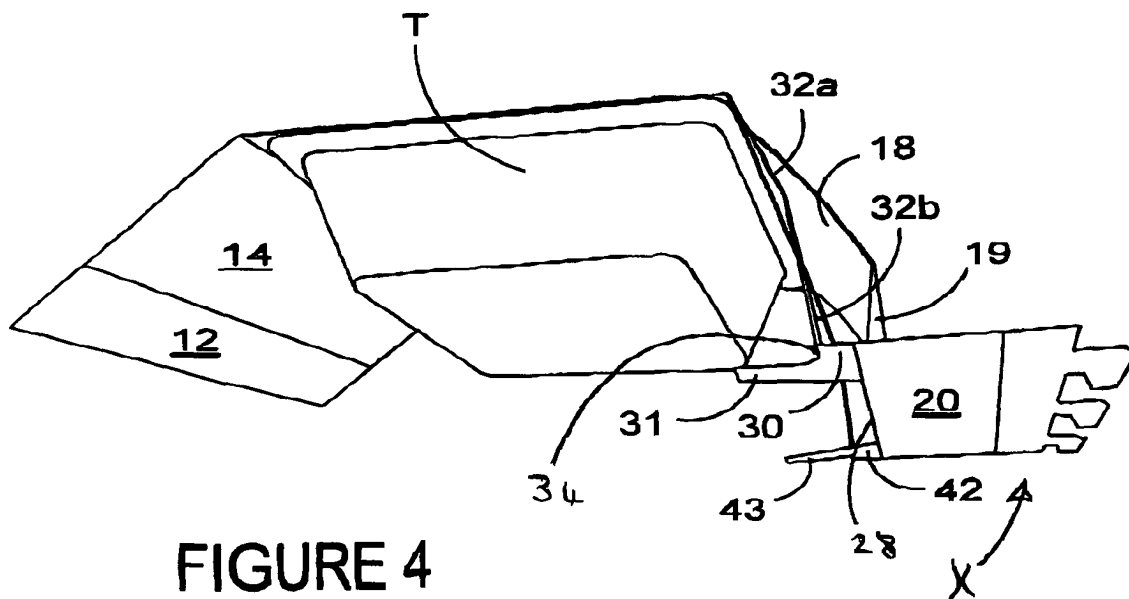


FIGURE 4

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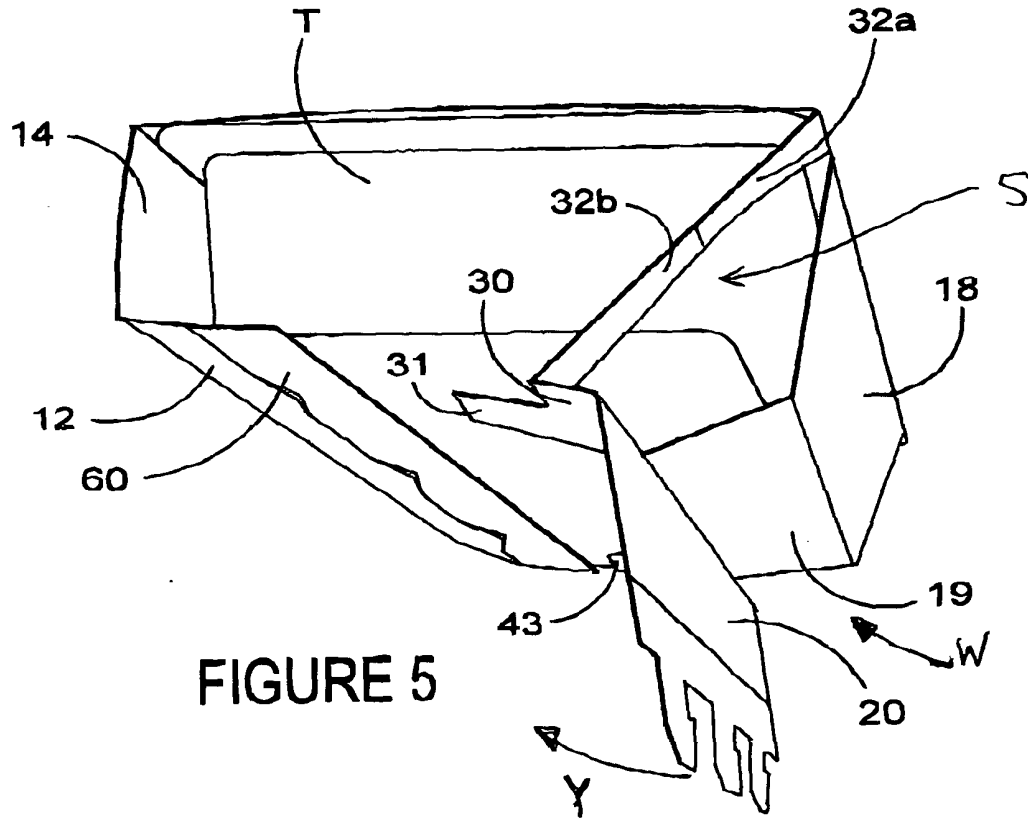


FIGURE 5

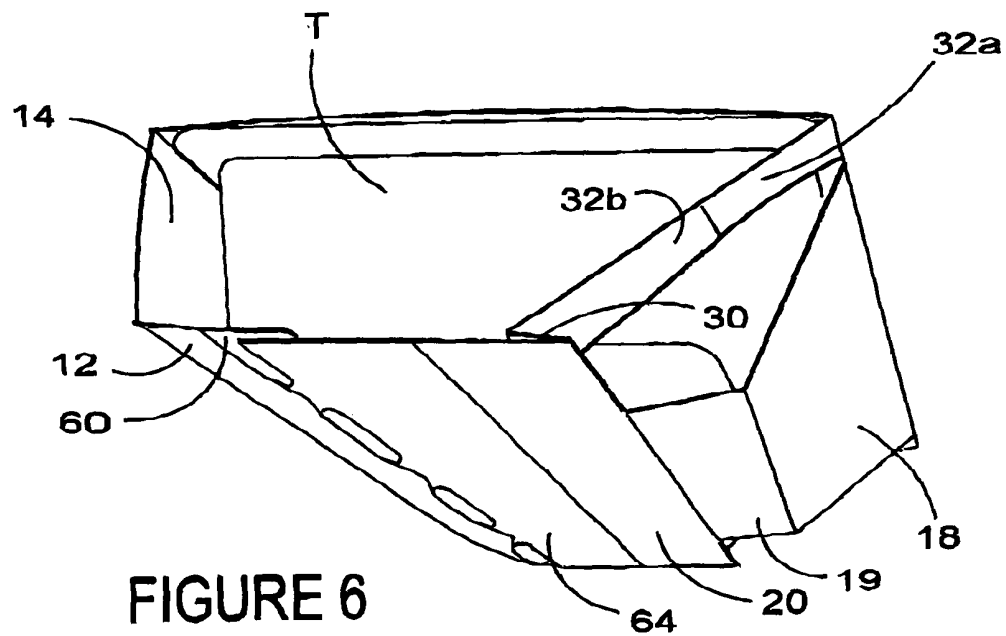


FIGURE 6

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